3(1)

S/026/60/000/03/008/047
D001/D006

AUTHOR: Yakovkin, A.A., Professor, Corresponding Member

TITLE: The Motion of the Moon. Celestial Mechanics as an Aid to Astronautics

PERIODICAL: Priroda, 1960, Nr 3, pp 47-50 (USSR)

ABSTRACT: This is a popular description of the orbital and axial motion of the moon and the influence exercised in this respect by the earth and sun. There are 3 diagrams and 1 Soviet reference.

ASSOCIATION: Akademiya nauk USSR (Academy of Science of the UkrSSR), Kiyev

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32039
S/035/61/000/011/002/028
A001/A101

3,2500 (1080)

AUTHORS: Yakovkin, A.A., Gorynya, A.A.

TITLE: Reduction of lunar observations onto the baricentric sphere

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 11, 1961, 10, abstract 11A90 ("Tr. 14-y Astrometr. konferentsii SSSR, 1958", Moscow-Leningrad, AN SSSR, 1960, 398-403, Discuss. 403, Engl. summary)

TEXT: The authors analyze the possibility of approximating the shape of the Moon by means of the smoothing curve of the following form:

$$r = R_0 + a\cos^4(p + \gamma)$$

$(a = 0 \text{ for } -90^\circ < p + \gamma < 90^\circ)$.

Thus the lunar shape is represented by a semicircle of radius R_0 and a 4-order curve, $r = R_0 + a\cos^4(p + \gamma)$. The mass center of the Moon coincides with the circle center; p is position angle of a point at the lunar edge; γ is the angle between the projection of the polar axis and the symmetry axis of the proposed model. The coordinate system is used which has the origin in the center of this circle, X-axis oriented northwards, and Y-axis oriented eastwards; using this system, the radius of the most probable circle and coordinates of its center, as

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Reduction of lunar observations ...

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well as the value of parameter a, were calculated by the least-square method. Materials of many years of observations of libration effect in radius and latitude corrections, separately for the western and eastern limbs, were used. The calculated results for values γ = 10, 15 and 20° are presented, which show agreement with observations. There are 12 references.

N. Bystrov

[Abstracter's note: Complete translation]

Card 2/2

YAKOVKIN, A.O., prof.

Present-day astrometry. Nauka i zhyttia 10 no. 10:45-48 O '60.
(MIRA 14:4)

1. Chlen-korrespondent AN USSR.
(Astrometry)

39313
S/035/62/000/007/013/083
A001/A101

3,2500

AUTHOR: Yakovkin, A. A.

TITLE: Determination of the function of Moon's inertia moments from Kazan' heliometric observations

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 7, 1962, 19, abstract 7A140 ("Izv. Gl. astron. observ. AN USSR", 1960, v. 3, no. 1, 3 - 14)

TEXT: As it is known, amplitudes of all waves of Moon's physical libration depend on the adopted value of libration parameter f. To determine it, the author proposes to calculate, using harmonic analysis method, the amplitude of the libration wave which has mean Sun's anomaly as argument and one-year period. Long extension of observations represents a necessary condition for the possibility of separating individual periodical terms; therefore, this analysis can be successful only in the case when different isolated observation series, following each other, will be considered as one continuous series. The author processes jointly all series of libration observations conducted in Kazan' from 1895 to

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S/035/62/000/007/013/083
A001/A101

Determination of the...

1945. It was found in the result of calculations, that the wave amplitude with a period equal to one year amounts to 7±9". The f-value equal to 0.70±0.02 corresponds to the value obtained. There are 5 references.

S. Makover

[Abstracter's note: Complete translation]

Card 2/2

YAKOVKIN, A.A.

Using the method of position angles in determining elements of the physical libration of the moon. Izv.Glav.astron.obser.AN USSR 4 no.1:3-12 '61. (MIRA 14:10)
(Moon--Libration)

YAKOVKIN, A.A., otv. red.; MEL'NIK, T.S., red. izd-va; DAKHNO, Yu.B., tekhn. red.

[Brief astronomical calendar for the year 1963]Kratkii astronomicheskiy kalendar' na 1963 god. Kiev, Izd-vo Akad.nauk USSR, 1962. 101 p. (MIRA 16:2)

1. Chlen-korrespondent Akademii nauk Ukr.SSR (for Yakovkin).
(Astronomy) (Calendars)

GORYNYA, Anton Ageyevich;DROFA,Vasiliy Kirillovich;YAKOVKIN, A.A., otv. red.; LABINOVA, N.M., red.izd-va; RAKHLINA, N.P., tekhn. red.

[Relief of the boundary area of the moon; based on photographic observations on the astrograph of the Astronomical Observatory of Kiev University] Rel'ef kraevoi zony Luny; po fotograficheskim nabliudeniiam na astrografe astrono icheskoi observatorii Kiev-skogo gosudarstvennogo universiteta im. T.G.Shevchenko. Kiev, Izd-vo Akad. nauk USSR, 1962. 162 p. (MIRA 15:5)
(Moon—Surface)

YAKOVKIN, A.A.

Design of a cassette for photographing the moon with the surrounding stars. Izv. Glav. astron. obser. AN URSR 4 no.2:32-34 '62. (MIRA 15:11)

(Moon) (Astronomical photography)

YAKOVKIN, A.A.

An unsolved problem in astrometry. Astron.zhur. 39 no.4:736-745 Jl-Ag '62. (MIRA 15:7)

1. Astronomicheskaya observatoriya Kiyevskogo gosudarstvennogo universiteta.

(Astrometry)

L 40822-65 EWT(1)/EWG(v) Po-4/Pe-5/Pq-4/Pac-4/Pae-2 GS/GW

ACCESSION NR: AT5009177 UR/0000/63/000/000/0029/0031

AUTHOR: Yakovkin, A. A.

TITLE: Report on the work of the Podkomissiya po izucheniyu dvizheniya i figure luny (Subcommission on the study of the Motion and Figure of the Moon) in 1958-1960

SOURCE: Astrometricheskaya konferentsiya SSSR. 15th, Pulkovo, 1960. Trudy Moscow, Izd-vo AN SSSR, 1963, 29-31

TOPIC TAGS: moon, lunar figure, lunar motion, astrometry, Markowitz camera, lunar libration

ABSTRACT: Work in the following directions is now being done at the Pulkovo, Goloseyevo, Moscow and Kazan' observatories: 1) systematic observations of the moon with a Markovitz camera in order to determine its coordinates 2) investigation of the [illegible] profile for determining characteristics revealing lunar libration 3) search for new methods for determination of the parameters of lunar physical libration. At the Pulkovo observatory, electronic methods have been developed and used successfully for automatic measurement of the lunar profile (N. F. Bystrov and Kh. I. Potter). It has been demonstrated that the smoothed lunar profile is not a circle. Lunar photographs are processed

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systematically to obtain the differences "ephemeris time minus Universal Time". At Goloseyevo, I. V. Gavrilov has completed an investigation of the figure of the limb zone of the moon from photographs taken in 1955-1957. Libration effects in the lunar radius and the position of the center of the lunar figure have been investigated. It has been shown that there is asymmetry of the lunar disk both relative to the equator and relative to the axis of rotation. The barycentric macrorelief of the limb zone has been determined. More than 100 negatives have been obtained by the Markowitz method and measured and reduced for determination of lunar coordinates. A. A. Gorynya has completed a reanalysis of the heliometric observations of Hartwig in order to determine the constants of lunar physical libration. Computations were made in several variants. I. M. Demenko has used Greenwich and Washington meridian observations (1923-1952) for a determination of the inclination of the lunar orbit with libration in radius taken into account. Its coefficient is +0".06 per one degree of libration. A. A. Yakovkin has developed a position angles method for determination of the parameters of lunar physical libration which is not dependent on lunar profile. A. A. Gorynya has tested the method and obtained values for the inclination of the lunar equator and the functions of the moments of inertia close to the results of reworking of heliometric series, both values considerably exceed those generally accepted. At the Engel'gardtskaya astronomicheskaya observatoriya (Engel'gardt

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Astronomical Observatory) in Kazan', A.A. Nefed'yev has processed his second series of lunar observations (1946-1958) using an electronic computer and is continuing observations with a heliome er N. G Rizvanov has observed the moon with a Markowitz

and 10".21.

ASSOCIATION: None

SUBMITTED: 6Apr63 ENCL: 00 SUB CODE: AA

NO REF SOV: 001 OTHER: 000

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YAKOVKIN, A.A., otv. red.; ORLIK, Ye.L., red.; REKES, M.A., tekhn. red.

[Brief astronomical calendar for 1964] Kratkii astronomicheskii kalendar' na 1964 god. Kiev, Izd-vo AN USSR, 1963. 199 p. (MIRA 17:2)

1. Chlen-korrespondent AN Ukr.SSR (for Yakovkin).

L 43546-65 EWG(v)/EWT(1)/EEC(t) Pe-5/Po-4/Pae-2 GW/GS

ACCESSION NR: AT5009188 UR/0000/63/000/000/0407/0410

27
B+1

AUTHOR: Yakovkin, A.A.

TITLE: Determination of the parameters of lunar physical libration by a method not dependent on the figure of the moon

SOURCE: Astrometricheskaya konferentsiya SSSR. 15th, Pulkovo, 1960. Trudy. Moscow, Izd-vo AN SSSR, 1963, 407-410

TOPIC TAGS: moon, lunar physical libration, lunar figure, lunar crater, lunar limb, Moesting A

ABSTRACT: Existing methods for determining the parameters of lunar physical libration are ineffective. The author has developed a method based solely on measurement of the position angles of several small lunar craters relative to Moesting A. The observations can be made visually with a wire micrometer or photographically. In derivation of the formulas it is assumed that the image on the plate is similar to the central projection of the lunar surface onto the figure plane passing through the center of the moon perpendicular to the straight line connecting the center of the moon and the observation station. The center of the projection coincides with the optical center of the objective. By having the approximate selenographic coordinates of the observed craters it is

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possible to use well-known formulas for computation of the orthogonal coordinates on the figure plane of these craters. By multiplying them by (1 + cos S sin h), where h is the apparent radius of the moon and S is the angle at the center of the moon between the observed crater and the point of observation, it is possible to obtain the coordinates x and y of the central projection onto the figure plane. It is therefore possible to compute [illegible] craters. These straight lines can be considered as the projection onto the figure plane [illegible] Their direction angles [illegible] it is possible to measure these same direction angles using the [illegible] plate or stars situated in another [illegible] observed and computed, [illegible] dependent on the errors of selenographic coordinates, taken from lists, and the errors assumed in computation of the parameters of lunar physical libration, not taking into account random measurement errors. It is then possible to obtain the free terms of the condition equations. The unknowns will be the corrections for the inclination of the lunar equator to the ecliptic (ΔI) and the correction for the assumed value of the known function of the moments of inertia (f). The formulas will be derived more simply if the position angles are read from the pole of the ecliptic and the rectangular

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ACCESSION NR: AT5009188

coordinates in the figure plane are computed in an ecliptic system. The position angle from Moesting A to the second crater $\pi_{1,2}$ is computed from the following equations:

$$S\cos\pi_{1,2}=x'_2-x'_1,\quad S\sin\pi_{1,2}=y'_2-y'_1 \tag{1}$$

The selenocentric coordinates should be computed taking into account physical libration with some assumed value f. The coefficients for the unknowns Δf and ΔI are computed using the formulas:

$$\left.\begin{aligned}\frac{\partial\pi_{1,2}}{\partial f}&=E(C_2B_2+D_2B'_2)-E(C_1B_1+D_1B'_1)+\\&+F(C'_2B_2+D'_2B'_2)-F(C'_1B_1+D'_1B'_1),\\\frac{\partial\pi_{1,2}}{\partial I}&=E(C_2A_2+D_2A'_2)-E(C_1A_1+D_1A'_1)+\\&+F(C_2A_2+D'_2A'_2)-E(C'_1A_1+D'_1A'_1),\end{aligned}\right\} \tag{2}$$

where the subscripts denote the number of the crater;

(3)

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$$A = \operatorname{tg} b \cos (l - n);$$

$$B = \alpha \left(\frac{d\tau}{df}\right)_0 \sec b + \operatorname{tg} b \sin (l - n) \sin I \left(\frac{d\alpha}{df}\right)_0 + \operatorname{tg} b \cos (l - n) \left(\frac{d\delta}{df}\right)_0;$$

$$A' = -\sin (l - n);$$

$$B' = -\sin I \cos (l - n) \left[\left(\frac{d\tau}{df}\right)_0 - \left(\frac{d\alpha}{df}\right)_0\right] - \sin (l - n) \left(\frac{d\varepsilon_1}{df}\right)_0;$$

$$C = -\sin \beta' \cos b \sin (\lambda' - l)\, 0.2725;$$

$$D = [\cos \beta' \cos b + \sin \beta' \sin b \cos (\lambda' - l)]\, 0.2725;$$

$$C' = -\cos b \cos (\lambda' - l);$$

$$D' = -\sin b \sin (\lambda' - l);$$

$$E = -S^{-1} \sin \pi_{1,\Sigma};$$

$$F = +S^{-1} \cos \pi_{1,\Sigma}.$$

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The first eight coefficients are computed for each crater in the pair. The error equations are obtained by substitution of equation (2) into the expression

$$\left(\frac{\partial \pi}{\partial I}\right)_0 \Delta I + \left(\frac{\partial \pi}{\partial f}\right)_0 \Delta f = \pi_{obs} - \pi_{comp} \qquad (4)$$

The following notations were used above: n — mean longitude of the ascending node of the lunar orbit; $\mathcal{L}$ — physical libration in longitude; $\mathcal{S}$ — physical libration in inclination; σ — physical libration in the longitude of the node; (α) = cos I cos b - sin I sin b sin (l - n); λ' — topocentric longitude of the moon + 180°; β' — topocentric latitude of the moon -180°; l — selenocentric longitude of the crater; b — selenocentric latitude of the crater; 0,2725 is the linear radious of the moon in units of the radius of the earth's equator. In selecting craters for observations an effort should be made to have the straight line connecting the crater Moesting A with a limb crater coincide with the direction of the shadows cast by parts of the crater, that is, be approximately perpendicular to the line connecting the cusp. Near the first and last quarters it is necessary to observe craters in the equatorial zone of the moon. The craters situated

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0

in the high latitudes would be observed in these periods with a large error. At full moon all craters are observed. It is desirable to select several small craters in addition to Moesting A, connecting them by multiple observations with Moesting A and with one another on the days of the full moon. Sample measurements of plates show that the mean error in measuring the position angle on one plate is ±30". Orig. art. has: 3 formulas.

ASSOCIATION: none

SUBMITTED: 06Apr63 ENCL: 00 SUB CODE: AA

NO REF SOV: 000 OTHER: 001

Card 6/6 mb

L 40819-65 EWT(1)/EWG(v)/EEC(t) Po-4/Pe-5/Pq-4/Pac-4/Pae-2 GS/GW
ACCESSION NR: AT5009190 UR/0000/63/000/000/0412/0416

AUTHOR: Yakovkin, A. A.

TITLE: Astrometry on the moon (a program of astrometric observations at a stationary lunar observatory)

SOURCE: Astrometricheskaya konferentsiya SSSR. 15th, Pulkovo, 1960. Trudy. Moscow, Izd-vo AN SSSR, 1963, 412-416

TOPIC TAGS: astrometry, lunar observatory, solar parallax, lunar mass, ephemeris time, nutation, aberration constant, nutation constant, lunar physical libration

ABSTRACT: This is a discussion of the contribution which can be made to fundamental astronomy by systematic observations at a lunar observatory. The most important possibility is determination of solar parallax with an accuracy greater by a factor of 100 than the present-day value. In observations of the sun from the moon the base used will be the diameter of the lunar orbit, exceeding by 60 times the length of a base laid out on the earth's surface. In observations of Eros from the lunar surface it will be possible to obtain plates showing the surrounding neighboring stars at any time during the lunar day.

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The most favorable period will be when the difference in the longitudes of the moon and planet is about 90 or 270°. The author demonstrates that it is easy to derive formulas for computation of solar parallax from such observations of a minor planet from the sun This, in turn, will make it possible to determine more precisely a number of other fundamental constants of astronomy, such as the constant of aberration, which cannot be determined reliably at this time Determination of solar parallax from observations from the moon will require knowledge of the lunar mass. The lunar mass is already known with sufficient accuracy for this purpose, but for other problems it must be determined more precisely; a precise knowledge of solar parallax will make this possible. The nutation constant is not yet known with sufficient accuracy, but a precise knowledge of lunar mass will solve this problem as well Ephemeris time now contains errors caused by the inability to compute the longitude of the lunar center of mass from observations and there is no fully effective method for conversion from the coordinates of the center of the figure to the center of mass This introduces errors into the elements of lunar physical libration and the coordinates of Moesting A Thus can be solved by measurements directly on the lunar surface near Moesting A with connection of the crater center to the observed point by triangulation. The selenographic coordinates obtained by this method would make it possible to observe the coordinates of Moesting A from Earth and obtain the true coordinates of the lunar center of mass, free of errors dependent on the figure of the moon

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ACCESSION NR: AT5009190

Observations of stars and distant meridian marks (50-100 km) on the moon would make it possible to obtain the inclination of the lunar equator to the ecliptic, the elements of lunar physical libration, and the elements of lunar rotation and to study the variations of its figure due to the influence of the gravity fields of the earth and sun. Orig. art. has: 5 formulas.

ASSOCIATION: None

SUBMITTED: 6Apr63 ENCL: 00 SUB CODE: AA

NO REF SOV: 001 OTHER: 000

Card 3/3

YAKOVKIN, A.A. [IAkovkin, A.O.]; DUMA, D.P.

Orientation of fundamental catalogs based on lunar observations. Dop. AN URSR no.6:761-764 '63 (MIRA 17:7)

1. Glavnaya astronomicheskaya observatoriya AN UkrSSR. 2. Chlen-korrespondent AN UkrSSR (for Yakovkin).

PYASKOVSKIY, Dmitriy Vladimirovich; YAKOVKIN, A.A., retsenzent;
PLUZHNIKOV, V.Kh., dots., retsenzent; KOSTENKO, Yu.I., red.

[Course of spherical astronomy] Kurs sfericheskoi astronomii.
Kiev, Izd-vo Kievskogo univ., 1964. 135 p. (MIRA 17:5)

1. Chlen-korrespondent AN Ukr.SSR(for Yakovkin).

YAKOVKIN, A.A., otv. red.; ORLIK, Ye.L., red.

[Short astronomical calendar for 1965] Kratkii astronomicheskii kalendar' na 1965 god. Vypusk 15. Kiev, Naukova dumka, 1964. 157 p. (MIRA 17:12)

1. Chlen-korrespondent AN Ukr.SSR (for Yakovkin).

YAKOVKIN, A.A., otv. red.; FEDOROV, Ye.P., red.; AKSENT'YEVA, Z.N., red.; BARABASHOV, N.P., red.; BOGORODSKIY, A.F., red.; GORYNYA, A.A., red.; KOVAL', I.K., red.; KOLCHINSKIY, I.G., red.; TSESEVICH, V.P., red.; KOVALENKO, L.D., red.

[Figure and motion of the moon] Figura i dvizhenie Luny. Kiev, Naukova dumka, 1965. 135 p. (MIRA 18:7)

1. Akademiya nauk URSR, Kiev.

L 47026-66 EWT(1) GW

ACC NR: AR6026514 SOURCE CODE: UR/0313/66/000/004/0071/0072

AUTHOR: Yakovkin, A. A.; Demenko, I. M., Miz', L. N.

26
B

TITLE: Formulas and methods for practical lunar astrometry

SOURCE: Ref. zh. Issl kosm prostr, Abs. 4.62.502

REF SOURCE: Tr. 16-y Astrometr. konferentsii SSSR, 1963. M.-L., Nauka, 1965, 119-121

TOPIC TAGS: moon, astrometry, lunar time, stellar time, moon orbit velocity, ephemeride, sun, Jupiter, lunar stellar day

ABSTRACT: The article briefly reports methods developed to determine place location on the moon. It is intended to make maximum use of automatic and telemechanical equipment. Latitude is to be determined by measurements of zenith distances near the meridian. Pairs of stars to the north and to the south of the zenith with neighboring alpha and zeta were selected for the parallels through 6°. Working ephemerides were composed for some latitudes. The alpha

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L 47026-66

ACC NR: AR6026514 O

and beta coordinates for 526 stars were calculated by differential formulae through ecliptical coordinates with a precision of 1" in the system of the mean lunar equator. The constants of physical libration are different from those of gaynovskiye (f = 0.82, I = 1°33'30") and the values of mean inclination of the ecliptic to the earth equator and the mean longitude of the escending node of the lunar orbit for the 1964 epoch have been calculated. Difficulties arise in the composition of ephemerides of visible star places in connection with the changes of rho and sigma components of the physical libration. The daily ephemeride of visible places of only 12 stars comprises 8760 coordinates. The authors, therefore, limit themselves to the calculation of reduction values (the orbital velocity of the moon is taken into account) and of reduction constants for the stars selected. Ephemerides of visible places of the Sun and of Jupiter have been made. It is suggested that it will be convenient to observe Jupiter in order to determine the latitude and longitude on the moon. It is porposed to measure time on the moon by lunar stellar days, the beginning of which is the moment of upper culmination of the visual point. Transition tables from the systems of lunar time to systems of mean terrestrial and stellar time have been calculated. N. Rizvanov. [Translation of abstract] [GC]

SUB CODE: 03/

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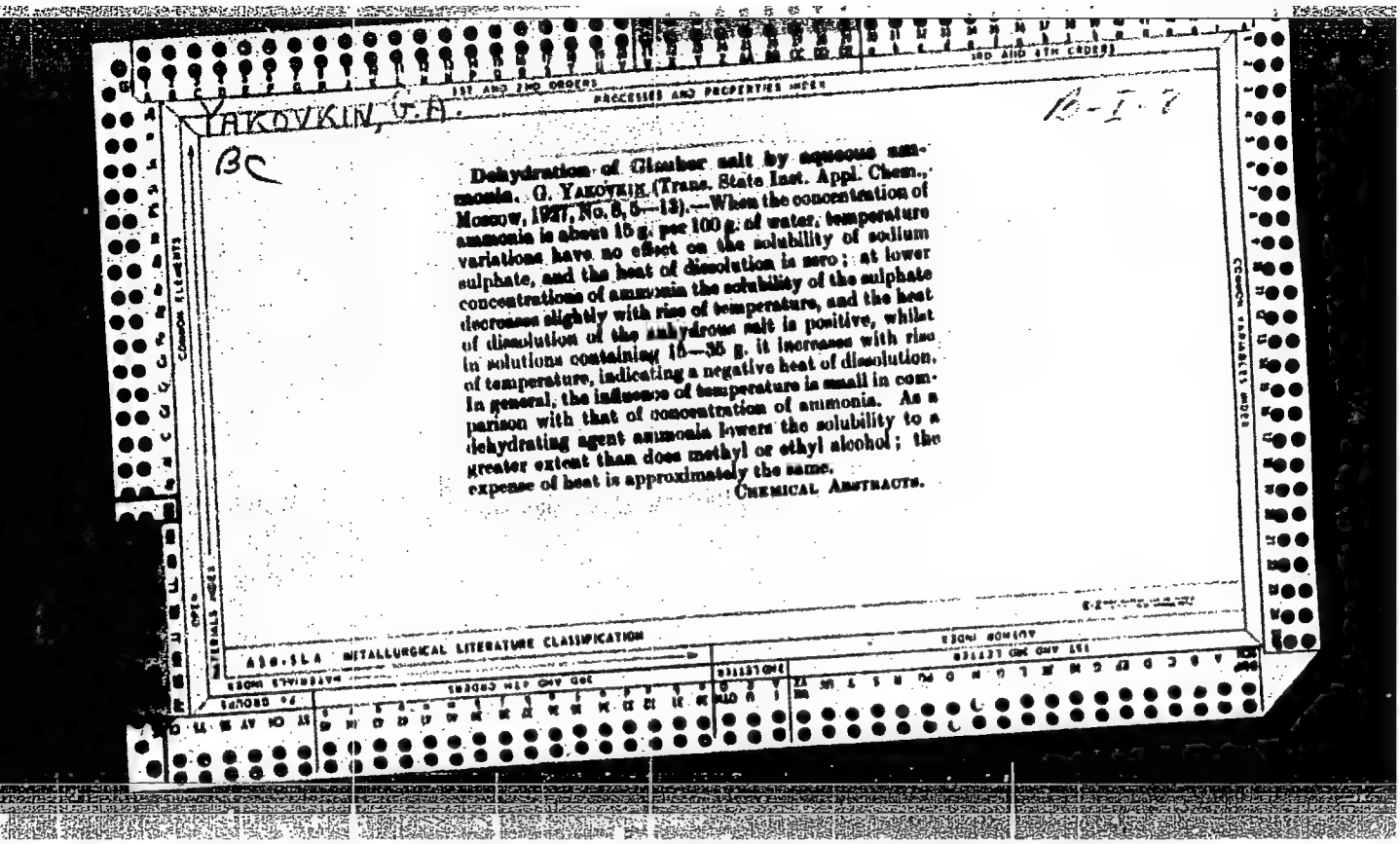


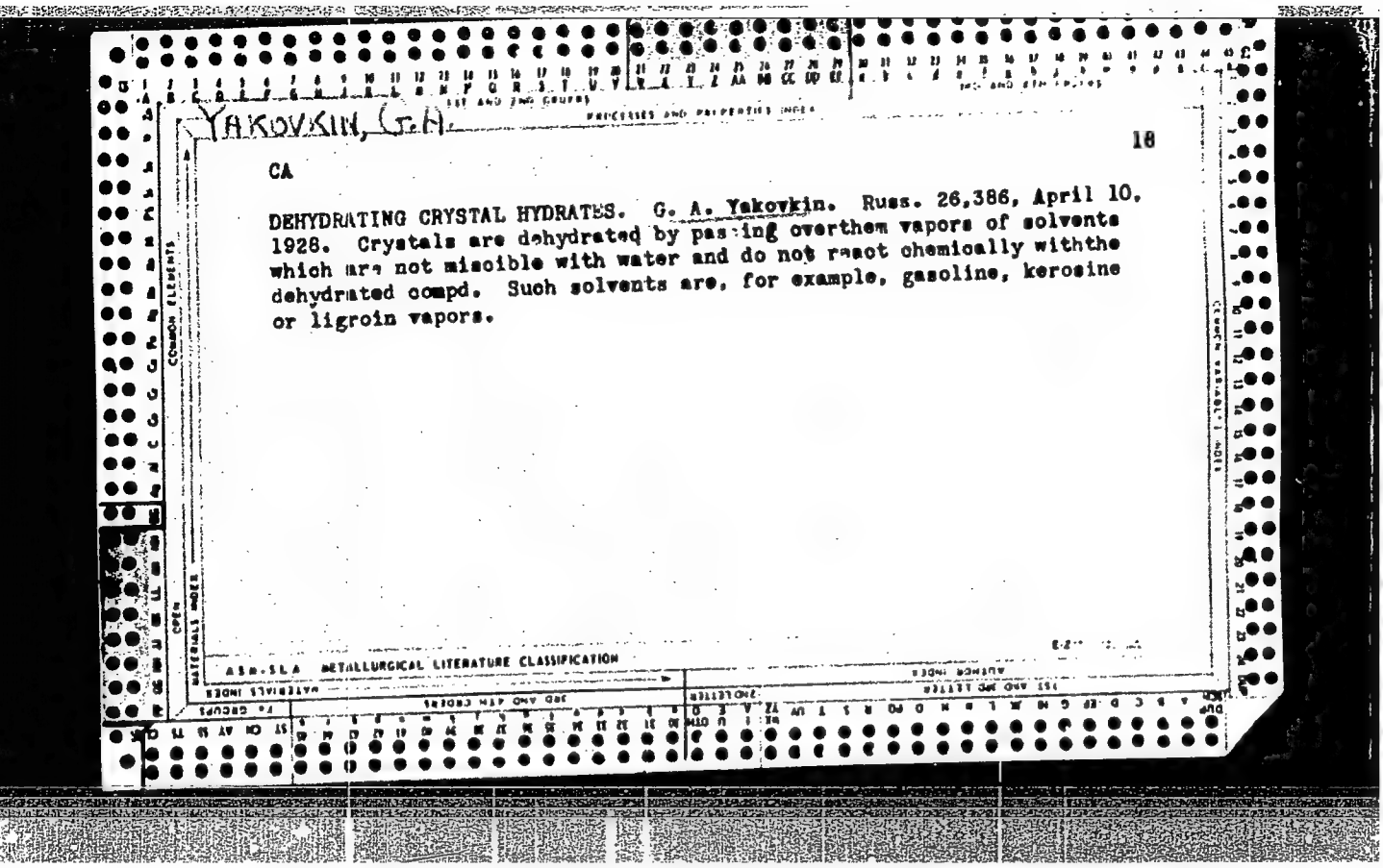
YAKOVKIN, V.A.

BC

10-1-7

Dehydration of Glauber salt by aqueous ammonia. G. YAKOVKIN (Trans. State Inst. Appl. Chem., Moscow, 1927, No. 6, 5—13).—When the concentration of ammonia is about 15 g. per 100 g. of water, temperature variations have no effect on the solubility of sodium sulphate, and the heat of dissolution is zero; at lower concentrations of ammonia the solubility of the sulphate decreases slightly with rise of temperature, and the heat of dissolution of the anhydrous salt is positive, whilst in solutions containing 15—35 g. it increases with rise of temperature, indicating a negative heat of dissolution. In general, the influence of temperature is small in comparison with that of concentration of ammonia. As a dehydrating agent ammonia lowers the solubility to a greater extent than does methyl or ethyl alcohol; the expense of heat is approximately the same.

CHEMICAL ABSTRACTS.

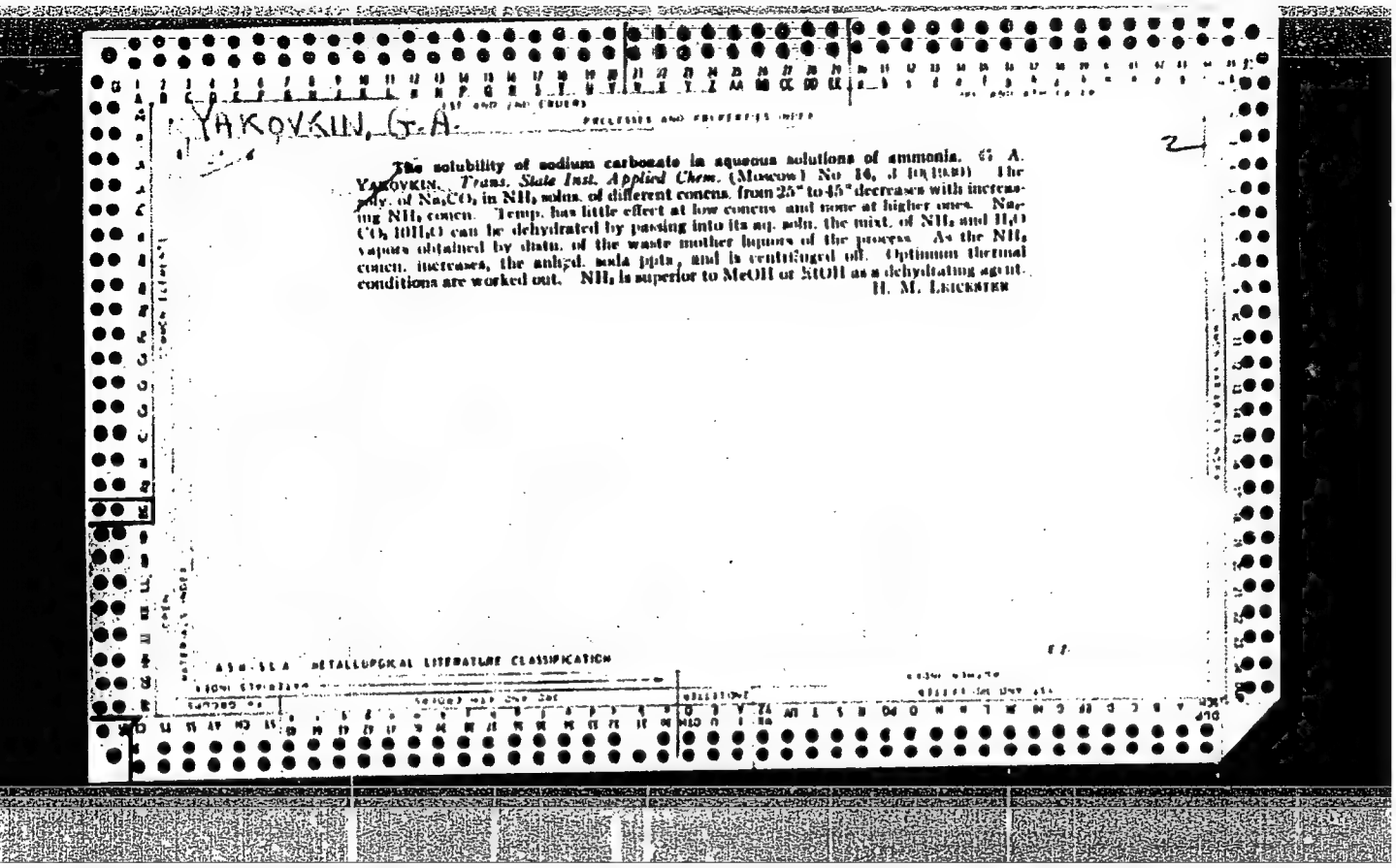


YAKOVKIN, G.A.

18

CA

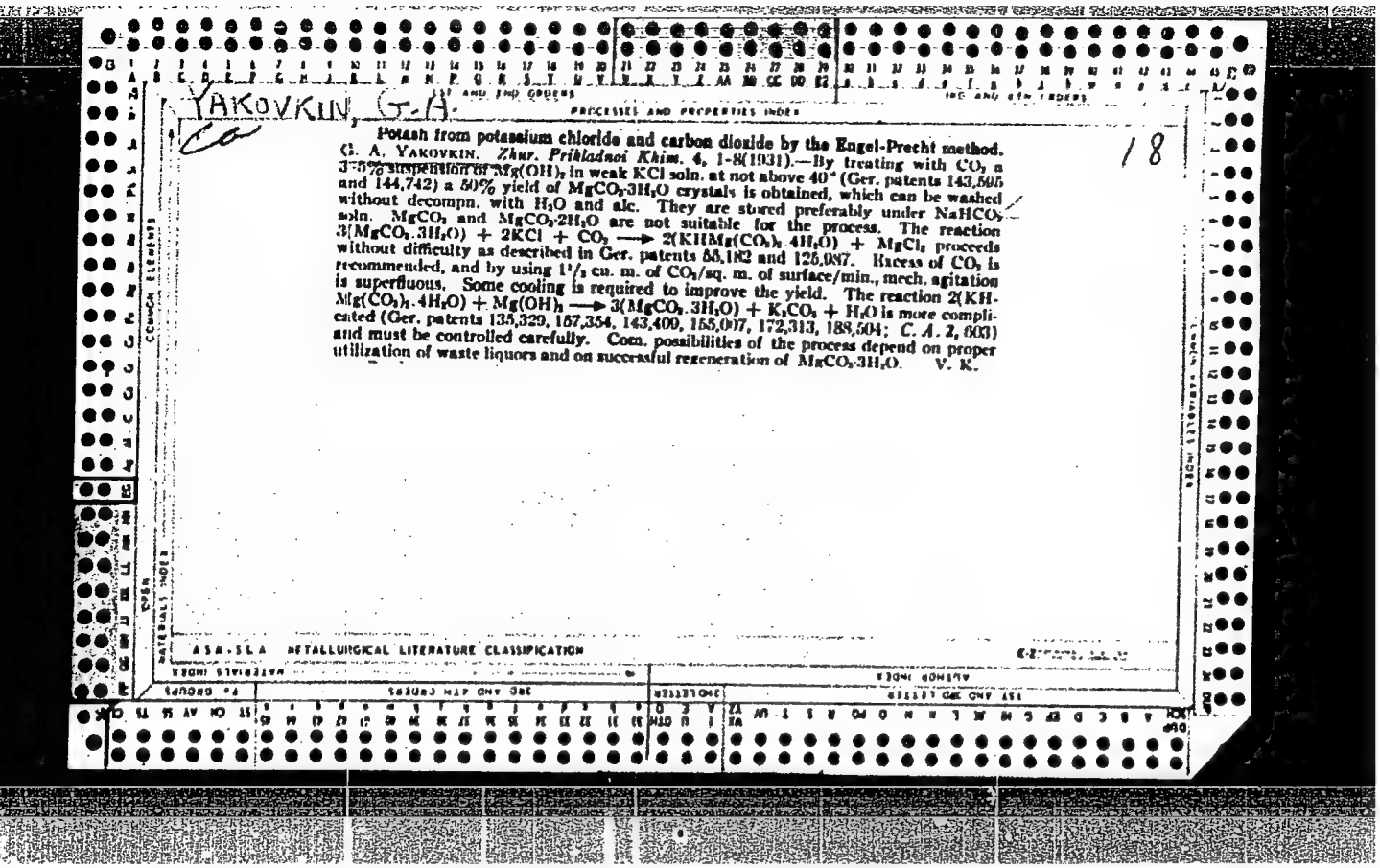
DEHYDRATING CRYSTAL HYDRATES. G. A. Yakovkin. Russ. 26,386, April 10, 1928. Crystals are dehydrated by passing overthem vapors of solvents which are not miscible with water and do not react chemically withthe dehydrated compd. Such solvents are, for example, gasoline, kerosine or ligroin vapors.



YAKOVKIN, G. A.

The solubility of sodium carbonate in aqueous solutions of ammonia. G. A. YAKOVKIN. *Trans. State Inst. Applied Chem.* (Moscow) No. 16, 3 (1929). The solv. of Na_2CO_3 in NH_3 solns. of different concns. from 25° to 45° decreases with increasing NH_3 concn. Temp. has little effect at low concns. and none at higher ones. $Na_2CO_3.10H_2O$ can be dehydrated by passing into its sat. soln. the mixt. of NH_3 and H_2O vapors obtained by distn. of the waste mother liquors of the process. As the NH_3 concn. increases, the anhyd. soda ppts. and is centrifuged off. Optimum thermal conditions are worked out. NH_3 is superior to MeOH or EtOH as a dehydrating agent.
H. M. LEICESTER

A54-55A METALLURGICAL LITERATURE CLASSIFICATION

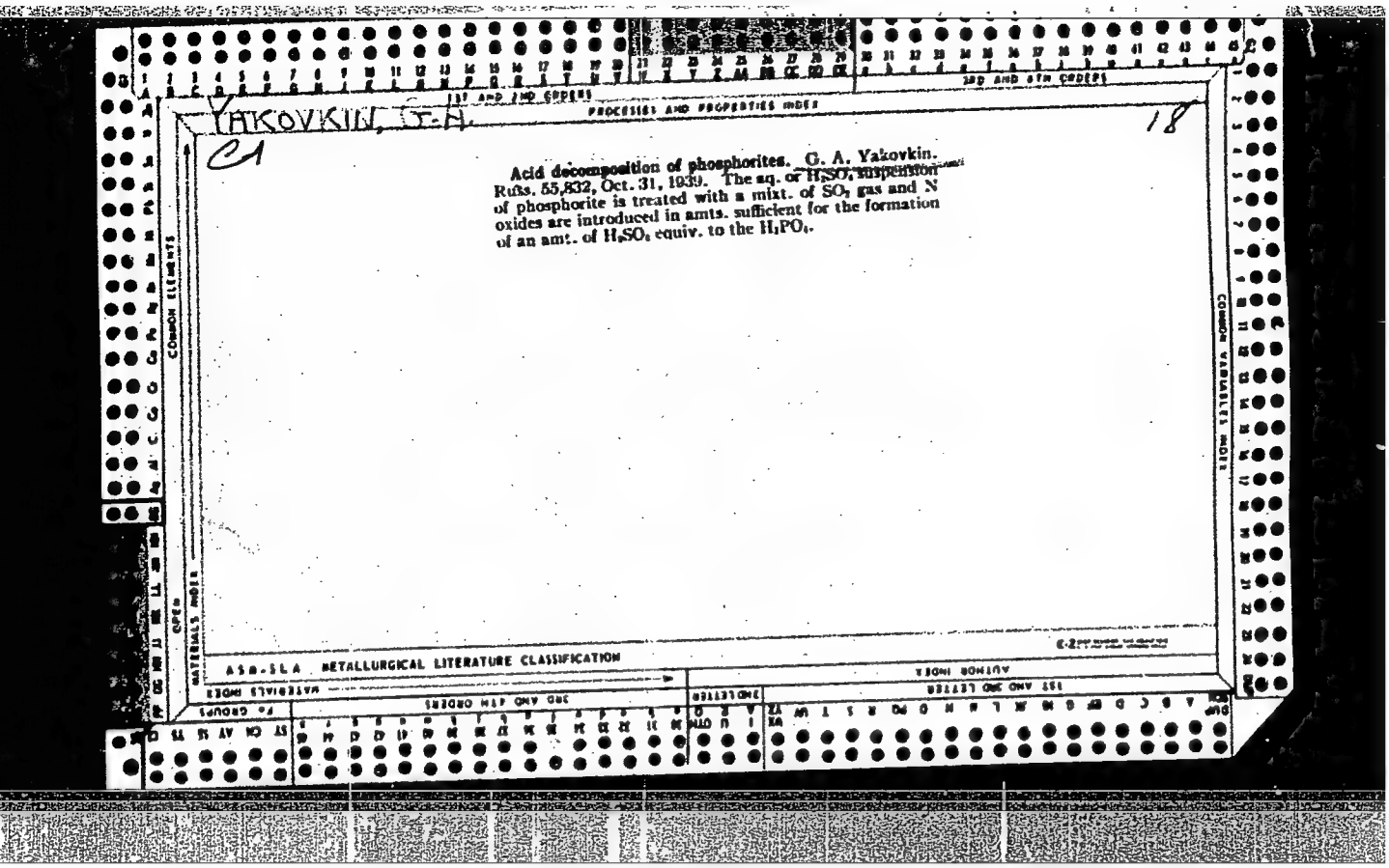


YAKOVKIN, G. A.

Ca

18

Potash from potassium chloride and carbon dioxide by the Engel-Precht method. G. A. YAKOVKIN. *Zhur. Prikladnoi Khim.* 4, 1-8(1931).—By treating with CO_2 a 3-5% suspension of $Mg(OH)_2$ in weak KCl soln. at not above 40° (Ger. patents 143,805 and 144,742) a 50% yield of $MgCO_3.3H_2O$ crystals is obtained, which can be washed without decompn. with H_2O and alc. They are stored preferably under $NaHCO_3$ soln. $MgCO_3$ and $MgCO_3.2H_2O$ are not suitable for the process. The reaction $3(MgCO_3.3H_2O) + 2KCl + CO_2 \longrightarrow 2(KHMg(CO_3)_2.4H_2O) + MgCl_2$ proceeds without difficulty as described in Ger. patents 55,182 and 125,087. Excess of CO_2 is recommended, and by using 1½ cu. m. of CO_2/sq. m. of surface/min., mech. agitation is superfluous. Some cooling is required to improve the yield. The reaction $2(KHMg(CO_3)_2.4H_2O) + Mg(OH)_2 \longrightarrow 3(MgCO_3.3H_2O) + K_2CO_3 + H_2O$ is more complicated (Ger. patents 135,329, 167,354, 143,409, 155,097, 172,313, 188,504; *C. A.* 2, 603) and must be controlled carefully. Com. possibilities of the process depend on proper utilization of waste liquors and on successful regeneration of $MgCO_3.3H_2O$. V. K.



YAKOVKIN, G.A., kandidat tekhnicheskikh nauk

On mineral salt production. Khim.prom.no.7 :200-205 Jl'47. (MIRA 8:12)
(Salts)

YAKOVKIN, G. A.

VOL'FKOVICH, S.I.; YEGOROV, A.N.; EPSHTEYN, D.A. [authors]; YAKOVKIN, G.A. [reviewer].

"General chemical technology." S.I.Vol'fkovich, A.N.Egorov, D.A.Epshtein. Reviewed by G.A.IAkovkin. Zhur.prikl.khim. 26 no.10:1103-1104 O '53. (MLRA 6:10)

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[Graphic calculation of salt systems] Graficheskie raschety solevykh sistem. Leningrad, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1960. 438 p. (MIRA 14:9)

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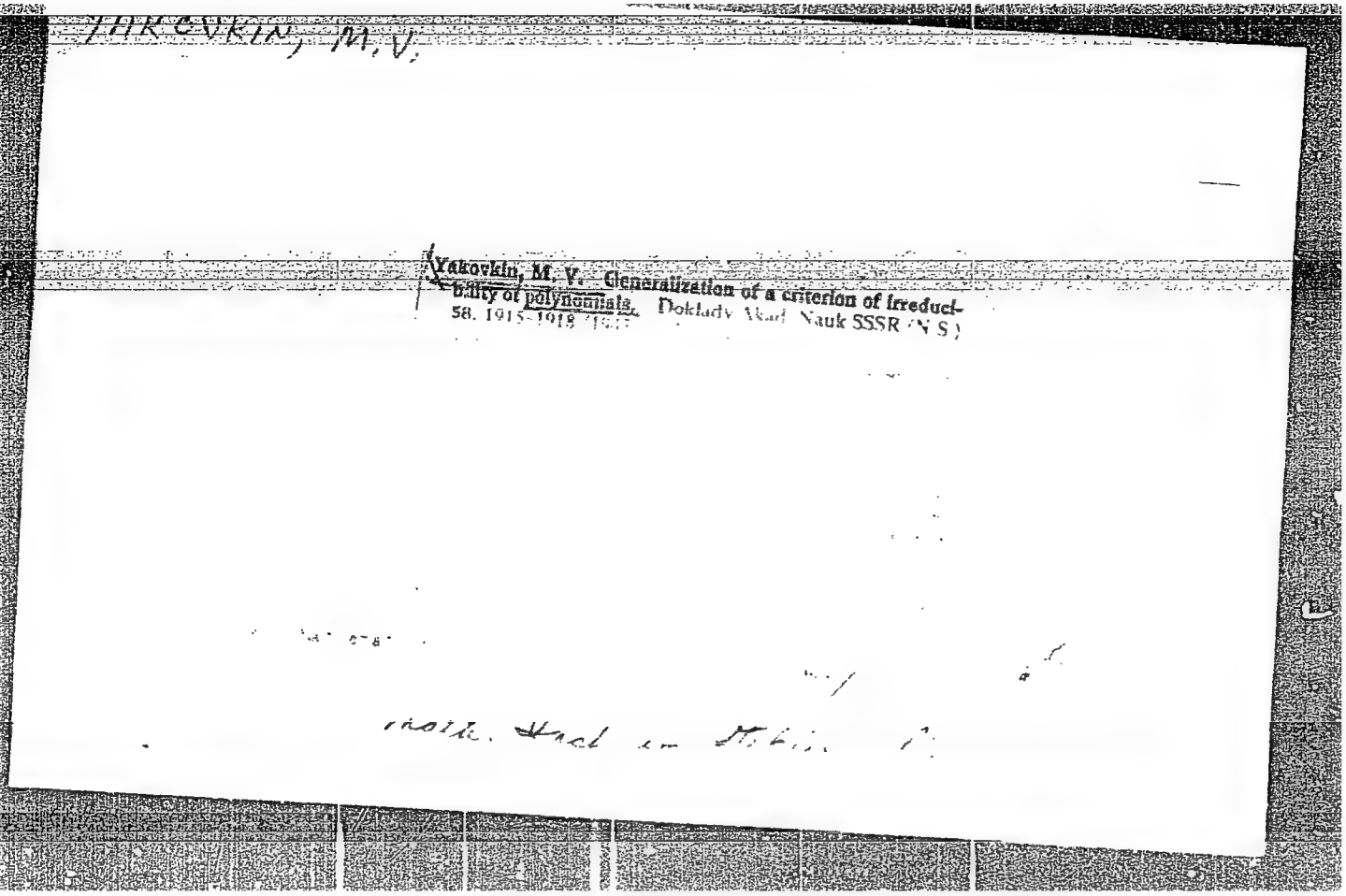

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Yakovkin, M. V. On a theorem of Pólya. Doklady Akad [illegible] N.S. 66, 169–172 (1949). (Russian)

[illegible] the result [illegible] of the roots [illegible] The author proves two theorems: (a) If integers k_1 and k_2 exist satisfying the conditions (a) $k \geqq R_L - \frac{1}{2}k_1$, $f(k_1) \neq 0$, $f(k_1+k_2)$ prime, or (b) $k_1 \leqq R_L - \frac{1}{2}k_1$, $f(k_1+k_2) \neq 0$, $f(k_1)$ prime, then [illegible] is irreducible in the field of the rational numbers [illegible] possesses a divisor [illegible] degree [illegible] which the [illegible] $-$ sign when $p_1/q_1 \leqq R_L + \frac{1}{2}p_2/q_2$, must possess at least one divisor of modulus exceeding $(P+1)^{\frac{1}{2}}q_2/(q_1, q_2)^{\frac{1}{2}}$ or $P+1)^{\frac{1}{2}}q_2/(q_1, q_2)^{\frac{1}{2}}$. Result (II) is a generalisation of a [illegible] $P+1 = k$, $q_1 = q_2 = 1$. [illegible] Landau, Vorlesungen über Zahlentheorie, Vol. 3, Leipzig, Hirzel, 1927, p. 137, problem 123.

R. A. Rankin

Source: Mathematical Reviews, Vol. 11 No. 1

Yakovkin, M. V.

Yakovkin, M. V. On some criteria for irreducibility of polynomials. Izvestiya Akad. Nauk SSSR. Ser. Mat. 14, 283–295 (1950). (Russian)

The author proves three theorems which give criteria for irreducibility of polynomials and states numerous corollaries.

The first theorem states that, if $f(x)$ is a polynomial of [illegible] with integral coefficients which possesses a divisor $\phi(x)$ of degree m ($1 < m < n$) whose coefficients are rational, and the integer $q^{n-1}f(p/q)$ must decompose into two factors of magnitudes exceeding $|q|^{t}$ and $|q|^{n-m-t}$, where p/q is any rational number distant more than t from the real part of each root of $f(x)$. This is a generalisation of a previous result of the author [Doklady Akad. Nauk SSSR (N.S.) 58, 1913–1918 (1947); these Rev. 9, 331]. Theorem 2 is the same as theorem 3 of an earlier paper [ibid. (N.S.) 66, 169–172 (1949); these Rev. 11, 11], while theorem 3 is a slightly more general form of a criterion described earlier by the author [ibid. (N.S.) 64, 771–774 (1949); these Rev. 10, 591].

R. A. Rankin (Cambridge, England).

Source: Mathematical Reviews, Vol. 12, No. 3

MOLODSHIY, Vladimir Nikolayevich; YAKOVKIN, M.V., red.; SMIRNOV, G.I., tekhn.red.

[Outline of the principles of mathematics; manual for mathematics teachers] Ocherki po voprosam obosnovaniia matematiki; posobie dlia uchitelei matematiki. Moskva, Gos.uchebno-pedagog.izd-vo M-va prosv. RSFSR, 1952. 229 p. (MIRA 12:5)
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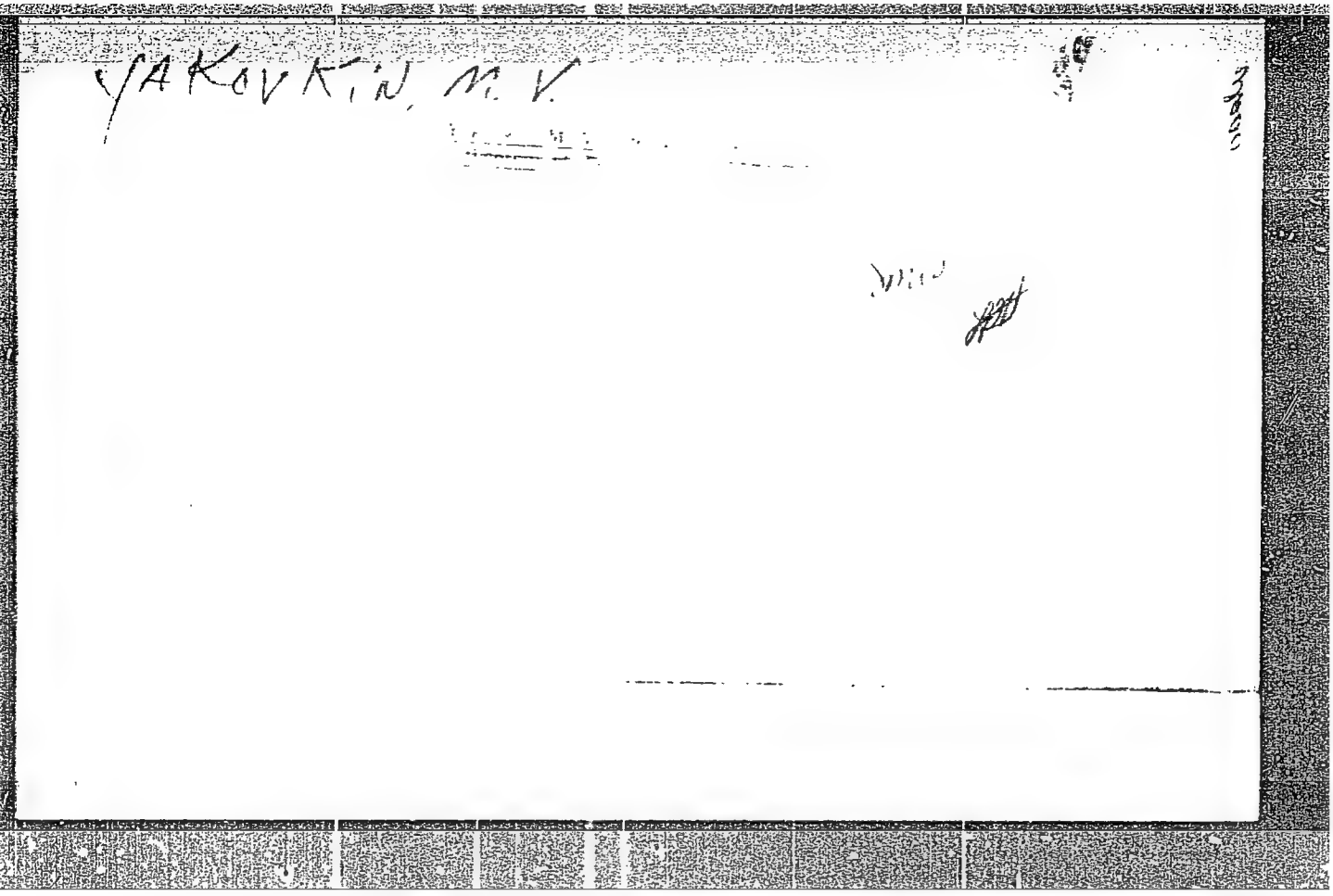

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Yakovkin, M. V. Necessary and sufficient conditions for reducibility of polynomials. Doklady Akad. Nauk SSSR (N.S.) 93, 629–631 (1953).

The author proves the theorem: Let

$$f(x)=\sum_{k=0}^{n}a_kx^{n-k},\quad \varphi(x)=\sum_{k=0}^{p}b_kx^{p-k},\quad \psi(x)=\sum_{k=0}^{q}c_kx^{q-k}$$

be polynomials with integral non-negative coefficients. Then in order that $f(x)=\varphi(x)\psi(x)$ it is necessary and sufficient that $f(1)=\varphi(1)\psi(1)$ and that $f(t)=\varphi(t)\psi(t)$ for some integer t exceeding all the coefficients of the polynomials. This is used to formulate criteria for reducibility of polynomials such as the following: Suppose that $f(x)$ is a polynomial with integral coefficients and that the least upper bound of its zeros is not positive. Take $t=10^m$ where m is the number of digits of the greatest coefficient of $f(x)$. Then it is necessary and sufficient for the reducibility of $f(x)$ that $f(t)$ should have at least two factors (each greater than unity) and that the sum of the coefficients of the number $f(t)$ when expanded in the scale of t should equal the product of the corresponding sums for the two factors. A generalisation of the theorem to products of r polynomials is also given. *R. A. Rankin* (Birmingham).

Yakovkin, M.V.

Yakovkin, M. V. On a method of finding irreducible factors. Doklady Akad. Nauk SSSR (N.S.) 93, 783–785 (1953). (Russian) 62

The criterion of the paper reviewed above is applied to the polynomial

$$x^5-5x^4+13x^3-22x^2+27x-20.$$

This leads to the consideration of the number

$$10513222720=1020305\cdot 10304.$$

This factorisation has the required property and gives rise to the factors x^3-2x^2+3x-5 and x^2-3x+4. This example is one to which Chebotarev applied Kronecker's method of reduction using a great number of steps. *R. A. Rankin.*

YAKOVKIN, M. V.

M. V. Yakovkin, Tablitsy ischisleniya ob'yema kroglogo lesa /Tables for Calculation of the Volume of Round Timber/, Rosgizmestprom, 6 sheets

An aid for workers of the timber and lumber enterprises of local and fuel industries.

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TAFT, V.A.; KOVALENKOV, V.I., redaktor; YAKOVKIN, M.V., redaktor; ASTAF'YEVA, G.A., tekhnicheskiy redaktor.

[Principles of calculating linear electric circuits according to their frequency ratings] Osnovy metodiki rascheta lineinykh elektricheskikh tsepei po zadannym ikh chastotnym kharakteristikam. Moskva, Izd-vo Akademii nauk SSSR, 1954. 234 p. (MLRA 8:1)

1. Chlen-korrespondent AN SSSR (for Kovalenkov)
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PRUDNIKOV, Vasiliy Yefimovich; YAKOVKIN, M.V., redaktor; KAPUSTINA, V.S., redaktor; KOZLOVSKAYA, M.D., tekhnicheskiy redaktor

[Russian mathematicians and pedagogues of the 18th and 19th centuries] Russkie pedagogi-matematiki XVIII-XIX vekov; posobie dlia uchitelei. Moskva, Gos. uchebno-pedagog. izd-vo Ministerstva prosveshcheniia RSFSR, 1956. 640 p. (MLRA 9:11)
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DITKIN, Vitaliy Arsen'yevich; PRUDNIKOV, Anatoliy Platonovich; YAKOVKIN, M.V., red.; YERMAKOVA, Ye.A., tekhn.red.

[Operational calculus of two variables and its application] Operatsionnoe ischislenie po dvum peremennym i ego prilozheniia. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1958. 178 p. (MIRA 12:3)
(Calculus, Operational)

16(0) PHASE I BOOK EXPLOITATION SOV/2959

Yakovkin, Mikhail Vladimirovich

Vychislitel'nyye tablitsy; posobiye dlya uchiteley (Computing Tables; Handbook for Teachers) Moscow, Uchpedgiz, 1958. 215 p.
38,000 copies printed.
Ed.: L.A.Sidorova; Tech. Ed.:M. I. Natapov, and T. A. Shchepteva.

PURPOSE: The tables in this book are intended for students and teachers specializing in mathematics, and for individuals engaged in computational work.

COVERAGE: The first part of the book contains the exact products of 4-place numbers by single-place numbers (from 0000 x 0 to 9999 x 9). The second part of the book contains the exact products of 3-place numbers by 2-place numbers (from 000 x 0 to 999 x 99). These tables make it possible to reduce the multiplication and division of many-place numbers to addition and subtraction respectively. These tables are only half the size of existing multiplication tables. They represent an important step in the direction of stabilizing the technique of using computational tables. The numerical material is presented

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in a simple manner, interesting not only in the sense of the number-theoretic peculiarities of the multiplicative operation, but also in the sense of the practical use of the tables. No personalities are mentioned. No references are given.

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Computing Tables; Handbook for Teachers SOV/2959

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[Tables of Bessel's functions for an imaginary argument and their integrals] Tablitsy funktsii Besselia ot mnimogo argumenta i integralov ot nikh. Moskva, Izd-vo Akad.nauk SSSR, 1958. 328 p.(Matematicheskie tablitsy) (MIRA 11:12)
(Bessel's functions)

BARKOV, I.Ya., otv. red. (g. Chelyabinsk), BUDANTSEV, P.A., red., (g.Orenburg), GONIN, Ye.G., red., (g. Perm'), KOCHETKOVA, Ye. S., red.,(g.Chelyabinsk), NAGIBIN, F.F., red.,(g. Kirov), SEMENOVICH, A.P., red.,(g. Sverdlovsk), CHAYKOVSKIY, N.A., red.,(g. Ural'sk), YAKOVKIN, M.V., red., MAKHOVA, N.N., tekhn. red.

[Problems in teaching mathematics in secondary schools; a collection of articles] Voprosy prepodavaniia matematiki v srednei shkole; sbornik statei rabotnikov kafedr pedagogicheskikh institutov Ural'skoi zony. Moskva, Gos. uchebno-pedagog. izd-vo M-va prosveshcheniia RSFSR, 1958. 350 p. (MIRA 11:10)

(Mathematics --Study and teaching)

KHOVANSKIY, Georgiy Sergeyevich; YAKOVKIN, M.V., red.; POPOVA, N.S., tekhn.red.

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PAGUROVA, Vera Ignat'yevna; DITKIN, V.A., prof., otv.red.; YAKOVKIN, M.V., red.; POPOVA, N.S., tekhn.red.

[Tables of the integral exponential function $E_\nu(x)=\int_1^\infty e^{-xu}u^{-\nu}du$] Tablitsy integro-eksponentsial'noi funktsii $E_\nu(x)=\int_1^\infty e^{-xu}u^{-\nu}du$. Moskva, Vychislitel'nyi tsentr Akad.nauk SSSR, 1959. 151 p. (MIRA 13:3)

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[Number theory of the reducibility of polynomials] Chislennaia teoriia privodimosti mnogochlenov. Moskva, Izd-vo Akad.nauk SSSR, 1959. 134 p. (MIRA 12:10)
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KIREYEVA, Ida Yevgen'yevna; KARPOV, Konstantin Andrianovich; DITKIN, V.A., prof., otv.red.; YAKOVKIN, M.V., red.; KORKINA, A.I., tekhn.red.

[Tables of Weber functions] Tablitsy funktsii Vebera. Moskva, Vychislitel'nyi tsentr. Akad.nauk SSSR. Vol.1. 1959. 340 p. (MIRA 13:11)

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[Program control for the "Strela-3" computer (recording changing commands)] Programma kontrolia dlia "Strely-3" (PIK). Moskva, Vychislitel'nyi tsentr AN SSSR, 1960. 20 p. (MIRA 14:7)
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[Standard programs for the BESM-2 digital computer of the Computer Center of the Academy of Sciences of the U.S.S.R.] Standartnye programmy BESM-2 vychislitel'nogo tsentra AN SSSR. Moskva, Vychislitel'nyi tsentr AN SSSR. No.2. 1960. 33 p. (MIRA 14:8)

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SHCHERBAKOV, Boris Dmitriyevich; SMIRYAGIN, V.P., otv.red.; YAKOVKIN, M.V., red.; KORKINA, A.I., tekhn.red.

[Power supply system for the BESM-2 computer on VSS-51 rectifiers] Sistema elektropitaniia BESM-2 na vypriamiteliakh tipa VSS-51. Moskva, Vychislitel'nyi tsentr Akad.nauk SSSR, 1960. 29 p. (MIRA 13:11)

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[Transducer of random numbers of the "Strela" computer] Datchik sluchainykh chisel na elektronnoi vychislitel'noi mashine "Strela." Moskva, Vychislitel'nyi tsentr Akad.nauk SSSR, 1960. 29 p. (MIRA 13:12)
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[Modernization of the magnetic memory device of the "Strela-3" computer] Modernizatsiia magnitnogo zapominaiushchego ustroistva na mashine "Strela-3." Moskva, Vychislitel'nyi tsentr Akad. nauk SSSR, 1960. 54 p. (MIRA 13:12)
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BELYAKOV, Vasiliy Mikhaylovich; KRAVTSOVA, Raisa Ivanovna; RAPPOPORT, Moisey Genrikhovich; KUZNETSOV, P.I., doktor fiz.-matem. nauk, prof., otv. red.; YAKOVKIN, M.V., red.; BRUZGUL', V.V., tekhn. red.; SIMKINA, G.S., tekhn. red.

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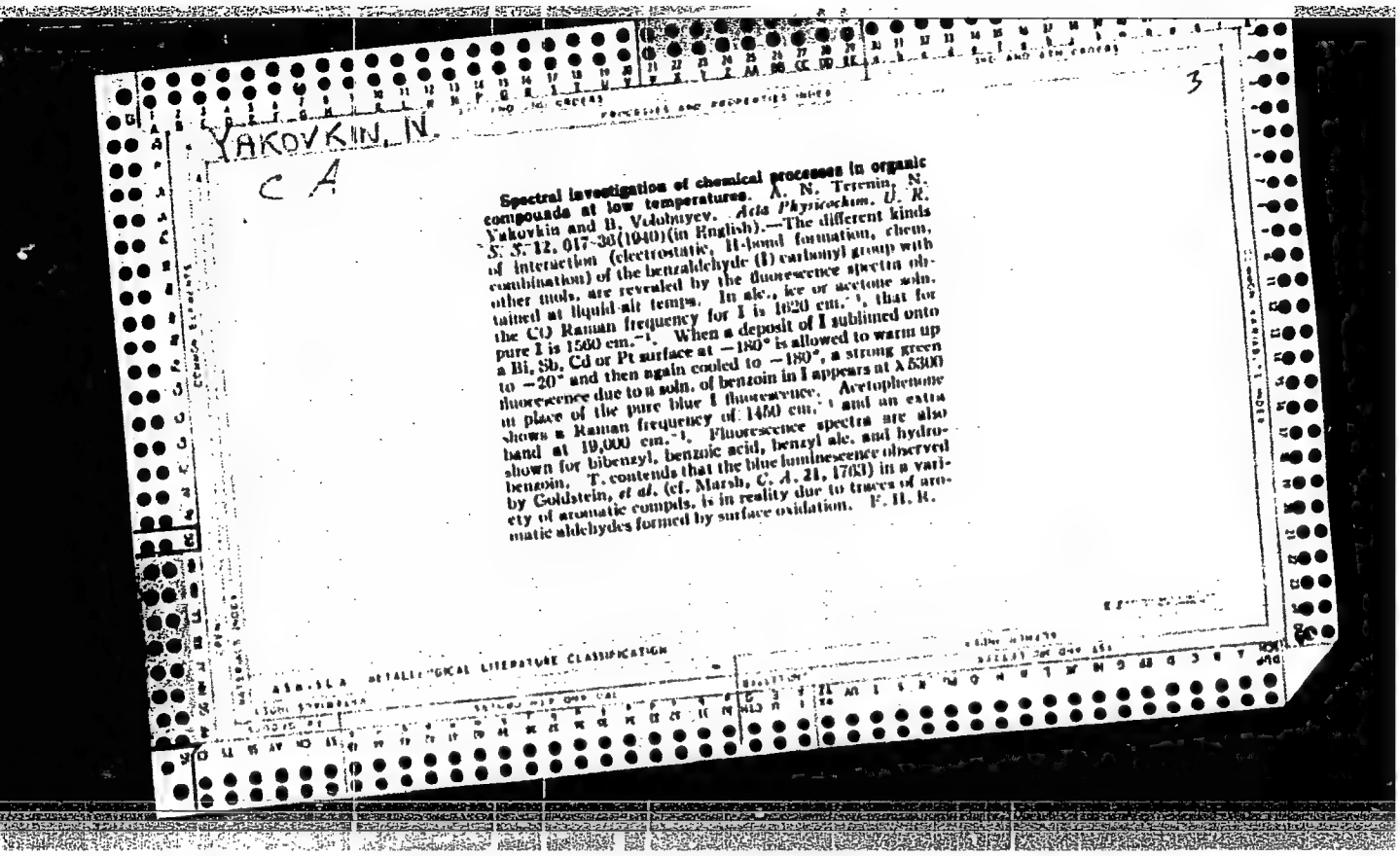

YAKOVKIN, N.

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Spectral investigation of chemical processes in organic compounds at low temperatures. A. N. Terenin, N. Yakovkin and B. Vodolnyev. *Acta Physicochim. U. R. S. S.* 12, 917–38(1940)(in English).—The different kinds of interaction (electrostatic, H-bond formation, chem. combination) of the benzaldehyde (I) carbonyl group with other mols. are revealed by the fluorescence spectra obtained at liquid-air temps. In alc., ice or acetone soln. the CO Raman frequency for I is 1620 cm.$^{-1}$, that for pure I is 1580 cm.$^{-1}$. When a deposit of I sublimed onto a Bi, Sb, Cd or Pt surface at −180° is allowed to warm up to −20° and then again cooled to −180°, a strong green fluorescence due to a soln. of benzoin in I appears at λ 5300 in place of the pure blue I fluorescence. Acetophenone shows a Raman frequency of 1450 cm.$^{-1}$ and an extra band at 19,000 cm.$^{-1}$. Fluorescence spectra are also shown for bibenzyl, benzoic acid, benzyl alc. and hydrobenzoin. T. contends that the blue luminescence observed by Goldstein, *et al.* (cf. Marsh, C. *A.* 21, 1703) in a variety of aromatic compds. is in reality due to traces of aromatic aldehydes formed by surface oxidation. F. H. R.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

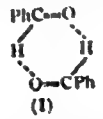
CA

3

Ionic density in the solar corona. N. A. Yakovkin (Kiev State Univ.). *Astron. Zhur.* 28, 79-82(1951).—The data of Schain (*Invest. Krimskoi Astrophs. Obs.* 1, 103(1947)) and Allen (*C.A.* 41, 2902h) are best represented by the formula $n = 0.6 \times 10^8 N_e/r^6 = 10^8(0.73r^{-6} + 1.8r^{-10})$, where n and N_e are the total ionic and electronic d., resp., and r represents distance from the center of the sun. Populations of excited levels are calcd. for Fe XI and Ni XIII; $n(r)$ is calcd. for Fe X, Fe XI, Fe XIV, Ni XII, and Ni XIII. $n \geq N_e \times 10^{-4}$ for all r. The wide disparity between Y.'s results and those of Shklovskii (*Astron. Zhur.* 22, 2, 87(1945)) is due to faulty assumptions by S. C. Feldman

CA YAKOVKIN, N.

Spectral study of the association of benzaldehyde molecules at low temperatures. A. Terenin, N. Yakovkin, and B. Volobuev (Leningrad State Univ.). *Uchënye Zapiski Leningrad. Gosudarst. Univ.* No. 120, *Ser. fiz. Nauk*, No. 7, 3-27(1949).—BzH was chosen for an investigation of the fluorescence in the adsorbed state on account of its discrete fluorescence spectrum in the visible; in the gaseous state, it consists of 4 maxima, distant by the vibration frequency of the C=O group, 1730 cm.$^{-1}$. Thin layers of BzH were evapd. and condensed onto carrier surfaces of Cd, Bi, and Sb, or of NaI and TlI, kept at −180°. Adsorption undoubtedly takes place at the C=O group, whereas light is adsorbed in the ring. The amt. of BzH in the adsorbed layer, necessary for the fluorescence to be observable, is of the order of several hundreds of A. units, i.e. of several tens of mol. layers. By comparison with the amt. necessary for observation of the fluorescence of the vapor, about 10-mol. layers on a surface should be sufficient; the discrepancy is attributed to the roughness of the carrier surface. (1) The fluorescence spectrum of BzH on well-outgassed Bi, Cd, or Sb (spectrum *A*) is sky-blue, and differs from that of the vapor in the shift of the peaks to longer waves, and by the change of the intermax. distance (i.e. the vibration frequency of the C=O group) from 1730 to 1560 cm.$^{-1}$. Proof that this change is due, not to an effect of the metal carrier surface, but to assocn. of BzH mols. in the cryst. adsorbed layer, is provided by the independence of spectrum *A* of the nature of the carrier metal and of the thickness of the adsorbed layer, and, further, by the change of the spectrum on simultaneous adsorption of BzH and H_2O. The intensity increases considerably and the fluorescence becomes bright blue (spectrum *B*). This spectrum includes 3 maxima, the positions of which coincide with those of gaseous BzH, and is characterized by a relatively long afterglow of about 20 sec., as compared with 5-10 sec. for spectrum *A*. The metal base has no influence on that phenomenon. The C=O vibration frequency in spectrum *B* is 1630 cm.$^{-1}$. It is plausible to attribute spectrum *B* to isolated, and spectrum *A* to BzH mols. dimerized through H bonds to I



(I)

A dimer of the structure PhCH.O.CHPh.O could not give a vibration frequency of the order of 1500 cm.$^{-1}$, and its spectrum should be shifted to shorter waves, which is not observed. (2) If, in the absence of moisture, adsorbed BzH is heated up to −20°, and then cooled back to −180°, a green fluorescence appears (spectrum *C*), characterized by a short afterglow of about 5 sec. This transformation takes place without exposure to ultraviolet light. The new compd., which emits the spectrum *C*, is stable and can be distd. *in vacuo*. For the purpose of its identification, a no. of derivs. and compds. related to BzH were investigated. BzMe

gives a green spectrum, owing to a max. at 5300 A., and a C=O vibration frequency of 1430–50 cm.$^{-1}$ (as compared with 1670–1690 cm.$^{-1}$ for gaseous BzMe; the distance between the long-wave maxima has the abnormally large value of 2050 cm.$^{-1}$). The max. at 4700 A., characteristic of BzMe, does not appear in any spectrum of BzH. Consequently, the spectrum *C* of BzH cannot be attributed to BzMe. But the spectrum of benzoin, a condensation product of BzH, does permit an identification of the spectrum *C* of BzH, provided it is legitimate to identify the broad 5300-A. max. of benzoin with the narrow 5300-A. band of spectrum *C* of BzH. One must assume that the spectrum *C* belongs to benzoin mols. sepd. in the adsorbed layer by intervening mols. of unassocd. BzH. Hydrobenzoin in an adsorbed layer gave a green spectrum with a max. at about 5400 A., which should appear only in compds. with a C=O group; it must, consequently, be concluded that this emission belongs to benzoin, dild. by an excess of hydrobenzoin. Benzil gives green fluorescence, with a broad max. at 5600 A. Oxidation products of BzH, e.g. the hydroperoxide BzOOH, gave only sky-blue fluorescence, and so did Bz_2O. In conclusion, the spectrum *C* is attributed definitely to benzoin. The conversion of adsorbed BzH to benzoin takes place on simple heating to −20°, as is prevented if the BzH mols. are sepd. by intervening H_2O mols. (3) On NaI, the fluorescence of BzH is faintly green, white, or blue-green, and becomes sky-blue only in thick layers or in the presence of H_2O; this fluorescence disappears rapidly under the action of ultraviolet. On TlI, the spectrum is of type *B*; green fluorescence is observed in thin layers, but its max., at 5500-A., is different from that (5200 A.) of spectrum *C*. (4) Types *A* and *B* are excited in the range 3300–3000 A., with a max. at 2800–2200 A.; the excitation range of type *C* is about the same, but the max. is somewhat narrower, 2700–2200 A. The fluorescence of BzMe is excited in a narrower range, 2900–2050 A., with a max. at 2800–2150 A. (5) Type *B* goes over into type *C* on 15-min. irradiation with ultraviolet.

N. Thon

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001961910006-8"

LIPIN, S.V.; ROMANOVA, M.F.; YAKOVKIN, N.A.

Errors in determining hemoglobin by Sahli's method. Trudy VNIIM no.3:13-28 '47. (MIRA 11:11)
(HEMOGLOBIN)

L 11353-65 EWT(l)/EWG(v)/EEC-4/EEC(t) Pe-5/Pq-4 ESD(gs)/ESD(dp)/AS(mp)-2/
Po-4/AEDC(a)/SSD/AFWL/ESD(t)/AFETR/SSD(a) JW

ACCESSION NR: AP4047155 S/0033/64/041/005/0914/0919

AUTHOR: Yakovkin, N. A.; Zel'dina, M. Yu. B

TITLE: H_α emission field in prominences

SOURCE: Astronomicheskiy zhurnal, v. 41, no. 5, 1964, 914-919

TOPIC TAGS: luminescence, Balmer line, solar prominence, solar energy, photospheric radiation, level population, hydrogen atom, ionization, recombination, resonance scattering, diffuse radiation, integral equation

ABSTRACT: The luminescence of all Balmer lines in solar prominences is due to photospheric radiation. In a previous investigation it was proved that each Balmer line in the prominences receives as much solar energy as it emits. The population of the upper levels of hydrogen atoms is produced by ionization and recombination mechanisms, but its numerical value coincides with the mechanism of resonance scattering. Therefore, multiple scattering in prominences creates a diffuse radiation from the whole prominence. This problem is studied through analysis of integral equations and graphs of theoretical con-

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tours of the H_α line for the prominence spectrum. In the case of resonance scattering of solar radiation in the H_α line, the prominence is filled with diffuse radiation owing to its opaqueness. The intensity of the photospheric radiation is sufficient to excite the apparent luminescence of the prominence. Orig. art. has: 5 figures, 1 table, and 10 formulas.

ASSOCIATION: Astronomicheskaya observatoriya Kiyevskogo gosudarstvennogo universiteta (Astronomical Observatory, Kiev State University)

SUBMITTED: 21Dec63 ATD PRESS: 3138 ENCL: 00

SUB CODE: AA NO REF SOV: 010 OTHER: 001

Card 2/2

YAKOVKIN, N.A.

Ion density in the solar corona. Publ.Kiev.astron.obser. no.4: 17-31 '50. (MLRA 7:9)

(Sun--Corona)

YAKOVKIN, N. A.

177T2

USSR/Astronomy - Solar Corona Mar/Apr 51

"Ion Density in the Solar Corona," N. A. Yakovkin, Obs of Kiev State U

"Astron Zhur" Vol XXVIII, No 2, pp 79-92

Processes observational results by Shayn (cf. "Izvestiya Krymskoy Astrofiz Obs," No 1, 102, 1947) and by Allen (cf. "M. N." Vol 106, No 2, 137, 1946) and introduces interpolation formulas for computation of ion density from intensity of spectral lines in the corona spectrum.

LC 177T2

YAKOVKIN, N.A.

A theory of the solar corona. Publ.Kiev.astron.obser.no.6:15-29 '54. (Sun--Corona)
(MLRA 9:4)

YAKOVKIN, N.A.

YAKOVKIN, N.A.

Observations of the solar eclipse of June 30, 1954, at the observatory of Kiev University. Astron.tsir. no.152:7 S '54. (MLRA 8:3)

1. Zaveduyushchiy otdelom Astrofiziki Astronomicheskoy observatorii Kievskogo universiteta.
(Eclipses, Solar—1954)

YAKOVKIN, N.A.

Observations of Mrkos' comet at the Kiev Astronomical Observatory. Astron.tsir. no.161:1 Jl '55. (MLRA 8:12)

1. Zaveduyushchiy Astrofizicheskim otdelom Kiyevskoy observatorii. (Comets--1955)

YAKOVKIN,N.A.

Hyperbolic orbit of comet Mrkos 1955e. Astron.tsir. no.161:1-2 Jl'55. (MLRA 8:12)

1. Astronomicheskaya observatoriya Kiyevskogo universiteta (Comets--1955)

YAKOVKIN, N.A.

Observations of Mrkos' comet at the astronomical observatory of Kiev University. Astron.tsir. no.162:7 Ag '55. (MLRA 9:5)

1. Zaveduyushchiy astrofizicheskim otdelom.
(Comets--1955)

YAKOVKIN, N.A.

"Artificial meteor". Mezhdunar. geofiz. god [Kiev] no.2:37-42 '60. (MIRA 14:1)

1. Astronomical Observatory of Kiyev State University.
(Meteors) (Photometry, Astronomical)

S/035/62/000/004/011/056
A001/A101

AUTHORS: Yakovkin, N. A., Zel'dina, M. Yu.

TITLE: Determination of self-absorption in spectral lines of prominences

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 4, 1962, 53, abstract 4A429 ("Solnechnyye dannyye", 1960 (1961), no. 12, 67 - 71)

TEXT: Various methods of determining self-absorption in spectral lines of prominences are compared. The Conway method ("Contrib. Dun. Obs.", 1952, no. 3) is estimated to be the most accurate one. The authors developed a nomogram for this method. The description of the nomogram is presented. There are 8 references.

R. G.

[Abstracter's note: Complete translation]

Card 1/1

S/269/63/000/002/013/037
A001/A101

AUTHOR: Yakovkin, N. A.

TITLE: The brightness gradient at the limb of the solar disk

PERIODICAL: Referativnyy zhurnal, Astronomiya, no. 2, 1963, 51, abstract 2.51.416 ("Tsirkulyar Astron. observ. Kiyevsk. un-ta", 1961, no. 70, 3 - 14)

TEXT: The study of darkening at the very limb of the solar disk (within a few tenths of an arc second) is of considerable interest, since this phenomenon is related to the structure of the photosphere. H. Kristenson's observations ("Ann. Stockh. Observ.", 1951, v. 17, no. 1; 1955, v. 18, no. 5) based on the study of the solar eclipse of June 9, 1945, yielded the magnitude of the brightness gradient at the very limb amounting to 5^m per 1" in the region λ 4800, 2^m in the region λ 3630 and less than one stellar magnitude in the region λ 3540. The author proposes a method of checking these results by photometering Bailey beads. Data obtained during the eclipse of June 30, 1954, are used. Spectrograms in the region λ 3200 - 4340 were taken with a diffraction camera; dispersion was ~5.5 A/mm; the scale in the camera focus was 68".75/mm.

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S/269/63/000/002/013/037
A001/A101

The brightness gradient at the limb of the solar disk

The spectra of ten Bailey beads were photometered perpendicular to dispersion (along the lunar limb) in 16 sections corresponding to different wavelengths. Photometric sections were selected in regions free of chromospheric lines. Intensities of beads in each section are referred to the intensity of one selected bead. The results show that there is no systematic change in the relative intensity of various beads with changing wavelength of the section. It means that the brightness gradient at the solar limb does not depend on λ, which agrees with the conclusions by Hayden and Hulbert (RZhAstr, 1956, no. 4, 2662) on the constancy of energy spectral distribution within the region 0.5 - 10" from the limb and contradicts Kristenson's results. Analyzing Kristenson's data the author holds them as erroneous due to a possible distortion of results by faint chromospheric lines in the case of a camera with low dispersion (130 A/mm), which was used to obtain the data, and also due to insufficient accuracy of processing observational results. In addition to photometric processing of bead spectra, the author plotted the profile of the lunar limb for the range of position angles which were used for the photometry. The profile corresponds sufficiently well to the picture of photometric sections. Also corrections to the Moon ephemeris have been evaluated. There are 7 references.
[Abstracter's note: Complete translation]

E. Gurtovenko

Card 2/2